

*A Discourse concerning Digestion in a Letter to the
Publisher from Mr. Charles Leigh of Brasen-Nose
Colledge Oxford.*

S I R,

Should I reckon up here the many controverted *theses* of *Anatomists* concerning this *subject*, & set up a new one of my own; it might perhaps seem a piece of fond presumption: I shall not therefore be so vainly *opinionative* as to think that I have here fully explained the nature of *Chylification*, but shall onely give you an account of an *Artificiall* digester which I hope may something illustrate the *naturall* one. It has been observ'd by *He'mont*, *Mebius*, *Tachenius*, and the Honourable Mr. *Boyle*, that meats by being kept in an *acid* liquor, would looke extreamly *white*. But I doe not find that by the help of a *salt* that is meerly an *acid*, there can be any *chyle* prepared from any *meats*. *Wedelius* is of opinion that *Chyle* is nothing but a mixture of *oil* and *Serum*. *Tilingius* affirms that tis made by a *nitrous Salt*. Dr. *Harvey* by *trituration*. Dr. *Willis* by an *acid* and *Sulphur*. *Diemerbrook* and *Sylvius* by the *Saliva*. Dr. *Mayow* by a *Nitroaerial principle*. *Galen* and *Aristotle* by *heat*. Others by a ferment spewed from the *glands* in the bottom of the *Stomach*. Others by the *relicts* of the *meat* grown *sour*. So many different *opinions* I shall neither pretend to reconcile or decide. And shall therefore onely lay down the *Phænomena* which this liquor afforded, and from them draw inferences as probable conjectures. But shall in the first place premise a description of this *digesting liquor*, and see how far it may probably parallel the *naturall ferment* in the *Stomach*. The taste of it is like meat vomited out of a full *Stomach*, something *Sour*, but will not ferment with an *Alkali*.

It is prepared from spirit of *Sulphur*, spirit of *Hartshorn*, the

the *Chyle* of a *Dog* and the *Saliva*: it is pellucid and without any smell: the *Salt* that it shoots into is *cubical*. Upon *veal* it afforded these *Phænomena*. Into a dram of this liquor I put a piece of *veal* about the bigness of a *Nut*, & set it upon a digesting furnace. In two hours time there came from the meat a liquor that had the colour and taste of *Chyle*, and the meat afterwards was lighter, dry, and insipid. And it afforded the same *Phænomena* also in beef, mutton, or any other meat that I could meet with. And here it is to be noted, that tho' it has been affirm'd by some that the same thing may be done by *acid* liquors only, yet since by all the tryals I have made upon 'em, I have not yet observ'd the like *Phænomena*, I hope my *Scepticism* in this case may be pardonable. If therefore we now consider that by the help of this *menstruum* there came from the before mentioned meats, a liquor which had the colour and taste of *Chyle*, and if we further consider that the taste of this *menstruum* is not distinguishable from the taste which is perceptible in meats vomited out of a full *stomach*; I hope I may without being thought fond of an *Hypothesis*, conjecture that by some such *menstruum* the meat is digested in the *stomach*. But here I would not be thought to affirm that by a liquid *menstruum* alone the meats are digested, but that there are likewise required these further requisits, in some, or in most creatures. First, that the *stomach* receive a gentle heat from the *liver*. 'Tis therefore for this reason said by the Learned *Glisson*, *Calor hepatis in hepate est actio, & ventriculo est usus*.

Secondly, that the *stomach* have a *naturall* situation. For, says *Riolanus*, *Interdum ventriculus propendet usque ad umbilicum, ut observatum in cadaveribus, quod vita coctioni multum immo modat*. And *Vesalius* in his *Anatomy* Lib. 4. gives us this example. *Observavi omentum in scrotum devolutum & aultum ventriculum ex sede sua distractissimum, adeo ut munus ejus deficeret*. Thirdly, it is assisted by the *omentum*. This may be argued from tho'le creatures which

have no caul, helping *concoction* by doubling their hinder legs, and resting their bellies upon them, as hares and conies. A second instance may be brought from *Valentinus*. *Andreas Molenbrochius in Miscellaneis curiosis Ann. 1670.* *Militaris quidam vir dum viveret nil nisi ventriculum accusabat, quod nullum cibum appeteret coqueretque, cui ad confortandum ventriculum multa adhibita fuere, sed omnia incassum: dissecto cadavere, omentum plane putrefactum est, ventriculo reliquisque visceribus salvis; ex quo colligitur, omentum ad ventriculi coctionem non parum facere.* Fourthly, 'tis necessary that the *stomach* have a *Tunica villosa*: 1. Because that by that it is enabled to divide the meat into parcells, which undoubtedly must much facilitate the operation of the *natural ferment*: As we see all *menstruums* will sooner dissolve *metalls* when they are filed into parcells, than when they continue in the lump. 2. If it had not a *Tunica villosa*, the *Tunica carnosa* would be apt to be too much distended by our meat and drink, which would necessarily weaken the tonical motion of the *stomach*, and consequently therefore its *digestion*.

Fifthly, that there be a right *digestion*, it's necessary that there be windings of the *Intestines*; for if it were not for these, the *digested meat* would move too fast from the *stomach*, and so torment us with perpetuall hunger. Which assertion I think may sufficiently be confirm'd by these two instances. The first is from *Cabrollius*, observation the 10th, and *Riolanus Anthrop. lib. 2. cap.*

Firminus Chaudonius voracitate erat Erysichtonæa, cui causam præbuit, quod nec stomachi nec intestinorum figuram ullam habebat proportionatam, unicum à Pylori loco ad Anum Intestinum erat sine ullo anfractu, cumque aliorum Intestina quatuordecim & quattuor ulnas, hujus vix ad quatuor spithamas. accedebant in formam literæ S. The 2. Instance is taken from a creature in *Lithuaniæ* and *Muscovy* that generally feeds upon it's prey, till it's belly be swell'd like a bladder, then conveys it self to some strait place, and so violently forces

forces the meat out of its *stomach* and *intestines*, and then immediately returns to its prey with as craving an appetite as before: which continuall and insatiable hunger is judged to proceed from the *straitness* of its *Intestines*; for, as the Learned *Pawius* observ'd in its dissection, its guts had no circumvolutions or windings. From these therefore 'tis plain that besides a fermenting liquor in the *stomach* other externall means concurr to digestion.

I shall therefore in the last place inquire what may probab'y be the *Ingredients* of the *natural ferment*, & so conclude. The *Ingredients* of the *natural ferment* I take to be these. The *saliva*, the *succus* of the *Glands* of the *stomach*, and a *nitro-aereal spirit* of the *nerves*. That the *Saliva* is an ingredient, may seem probable from these reasons. 1. Because that by the help of this, *meats* tho impregnated with different principles, may be made to mix with a *menstruum*; for, as the Learned *Steno* has it pag. the 27th, *de glandulis oris*: *Saliva vero omnia ferre valet; sive intra corpus sive extra corpus examinaveris, nihil invenies quod illa respuet, nihil cui sine pugna non associetur.* 2. Since the *Saliva* is impregnated with a volatile salt, it is probable that that too may help digestion. The second ingredient I take to be a *liquor* that is separated by the *glands* in the bottom of the *stomach*. And this I shall evince by the Authority of the famous *Willis*, and *Sylvius De le Boe*. And first from Dr. *Willis* in his *Pharmaceutice Rationalis*, pag. 6. *Tunica hæc villosa in postica sive convexa ejus superficie, quæ tunicae nerveæ cohæret, glandulis annulatis numeroſissimis ubique confita est, quæ proculdubio vasorum in tunica nervea dehiscientium ora contegunt: ac (uti videtur) humorem illis destinatum aut ab iis depositum, immediatius excipiunt ac percolant.* *Sylvius* pag 881. gives us this account of it: *hoc chylificans fermentum in recens natorum vitulorum ventriculis reperitur crassiusculum, diciturque coagulum: sensim autem minuitur, ac in adultis, glutinis instar, offenditur liquidiſculum inter ventriculi rugas hærens.* By these there-

fore it seems probable, that the glands in the *tunica villosa* separate a fermenting liquor, and 'tis further observ'd that those creatures which have the most of these glands, are the most voracious. Lastly that the *nitro-aerial* spirits of the nerves are an ingredient of the *stomachical ferment*, seems reasonable from the Arguments of Dr. Mayow, pag. 55. He argues thus: *Jam vero cum spiritus animales e particulis nitro-aereis constant, haud difficile erit intellectu quomodo effectus praedicti ab iisdem in ventriculo perficiuntur.* *Quanquam enim spiritus Nitro-aereus acidus non est, ab eodem tamen ferrum corroditur, vitriola perficiantur, salia fixa ad fluorem perducuntur, rerumque compages tanquam ab universalis mensu solvuntur.* These therefore (Sir) are my thoughts concerning digestion; but here is nothing in these *Cogmatically* asserted. If therefore any *Hypothesis* here may be found erroneous, upon better grounds I shall readily lay it down.

I am, SIR,

Your very humble Servant,

C. L.

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